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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,560	04/20/2001	Masanobu Shigeta	KYO.P0006	1275

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Akron, OH 44308-1456

EXAMINER

SCHECHTER, ANDREW M

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 06/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,560

Applicant(s)

SHIGETA, MASANOBU

Examiner

Andrew Schechter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9 is/are allowed.
- 6) ☒ Claim(s) 1-5, 7 and 8 is/are rejected.
- 7) ☒ Claim(s) 6 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Liquid crystal display and projector having electrode sections with equal areas and different heights".

Claim Objections

2. Claim 3 and 10 are objected to because of the following informalities: the "n" referred to in the specification and by these claims is understood by the examiner to be the "index of refraction" rather than the "reflectivity". Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 and 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by *Dubal et al.*, U.S. Patent No. 5,257,122.

Dubal discloses [see Fig. 6a] a liquid crystal display comprising a liquid crystal layer [5], a first electrode substrate [4], and a second electrode substrate [1], provided as recited, both being transparent, with first electrode sections [the portion of each pixel with a 20 nm thick orientation layer] and second electrode sections [the adjacent portion of each pixel with a 140 nm thick orientation layer], with the first sections having a higher height than the second sections, and the areas in total being equal to each other [as evident from the figure]. Claim 1 is therefore anticipated.

Dubal discloses that the predetermined height difference is 120 nm; for other selections of the first and second electrode sections it could also be 40 nm or 80 nm. For visible light, with $\lambda = 550$ nm being the median wavelength, and the index of refraction n ("reflectivity") being close to 1.5 for liquid crystal, the condition of claim 3 is that the height be in the range from 46 nm to 136 nm. This is met by *Dubal's* predetermined height difference, so claim 3 is also anticipated.

An area of each first electrode section is equal to the area of each second electrode section, so claim 4 is also anticipated. The sections are arranged in a matrix with the first and second electrode sections adjacent to each other, so claim 5 is anticipated.

5. Claims 1, 2, 4, 5, 7, and 8 are rejected under 35 U.S.C. 102(b) as being anticipated by *Aoki et al.*, U.S. Patent No. 5,897,187.

Aoki discloses [see Fig. 19, for instance] a liquid crystal display comprising a liquid crystal layer [9], a first electrode substrate [2], and a second electrode substrate [1], provided as recited, with the first one being transparent, and first electrode sections [W11 regions] having a first height higher than the height of the second electrode sections [W12 regions], with the areas in total being equal to each other [as evident from the figure]. Claim 1 is therefore anticipated.

Aoki states [col. 18, lines 40-43] that it can be used in a reflection type LCD, in which case the first electrode substrate is transparent and the second electrode substrate is a reflective electrode substrate, so claim 2 is anticipated.

An area of each first electrode section is equal to the area of each second electrode section, so claim 4 is also anticipated. The sections are arranged in a matrix with the first and second electrode sections adjacent to each other, so claim 5 is also anticipated. A row of first electrode sections extends into the page, and alternates with a row of second electrode sections, so claim 7 is also anticipated. A plurality of pairs each having one of the first electrode sections and one of the second electrode sections are arranged in a matrix, so claim 8 is also anticipated.

6. Claims 1, 4, 5, 7, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by *Kubo et al.*, U.S. Patent No. 6,195,140.

Kubo discloses [see Figs. 2 and 4, for instance] a liquid crystal display comprising a liquid crystal layer [25], a first electrode substrate [11], and a second electrode substrate [9], with first electrode sections [22, 23] and second electrode sections [20, 21], with the first electrode sections having a height higher than the

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second electrode sections [by the thickness of the reflective electrode layer], and the areas in total being equal [as is evident from Fig. 4]. Claim 1 is therefore anticipated.

An area of each first electrode section is equal to the area of each second electrode section, so claim 4 is also anticipated. The sections are arranged in a matrix with the first and second electrode sections adjacent to each other, so claim 5 is also anticipated. A row of first electrode sections extends horizontally, and alternates with a row of second electrode sections, so claim 7 is also anticipated. A plurality of pairs each having one of the first electrode sections and one of the second electrode sections are arranged in a matrix, so claim 8 is also anticipated.

Allowable Subject Matter

7. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claim 10 is objected to above, but would be allowable if rewritten appropriately.

9. Claim 9 is allowed.

10. The following is a statement of reasons for the indication of allowable subject matter:

The limitation that the total area of the first and second electrode sections be equal means that the sections cannot refer to electrodes such as gate lines for one and data lines for the other, even if they had equal thickness, since there are typically different numbers of these in the conventional rectangular display.

The prior art does not disclose the additional limitation of claim 6, that the sections are arranged in a matrix so that a group of a specific number of the first and a group of a specific number of the second are adjacent to each other. Here, based on the specification and Fig. 6, the examiner understands "arranged in matrix so that a group of a specific number" to exclude a group of one (the situation in the rejected claim 5), and to exclude alternating rows extending all the way across the display (the situation in the rejected claim 7). Claim 6 would therefore be allowable if rewritten appropriately.

The prior art does not disclose using the liquid crystal display of claim 1 in a projector comprising a light source, polarization beam splitter, and projection lens as recited by claim 9. Claim 9 is therefore allowed, and its dependent claim 10 would also be allowed if rewritten appropriately to address the above objection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (703) 306-5801. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

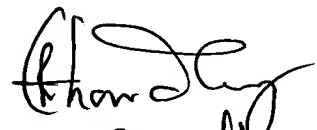
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4711 for regular communications and (703) 746-4711 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Andrew Schechter
June 4, 2003



T. Chowdhury
Primary Examiner